

A Study on *Eulachnus* del Guercio from China, with Description of One New Species

(Homoptera: Aphidoidea, Lachnidae)

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Abstract: The materials of *Eulachnus* del Guercio from China are systematically studied. There are twelve species in China, including one new species, *E. similialticola* Zhang, sp. nov. and two new record species, *E. alticola* Börner and *E. tuberculostemmatus* (Theobald). Host-plants, geographical distribution, morphological figures and key to the Chinese species of this genus are provided.

Key words: Homoptera; Aphidoidea; Lachnidae; *Eulachnus*; new species; new record; China

1 INTRODUCTION

In the world, there are 21 genera in Lachnidae (Ghosh, 1982). Twenty-one genera lie in three subfamilies, Cinarinae, Lachninae and Traninae. Cinarinae is divided into three tribes, Eulachnini, Cinarini and Schizolachnini. Eulachnini contains three genera, *Eulachnus*, *Essgella* and *Pseudessigella*. *Eulachnus* was erected by del Guercio in 1909 for *Lachnus agilis* Kaltenbach, 1843. The genus consisted of sixteen species, most of which feed on needles of different species of *Pinus* except *E. tamaricis* Nevsky, which is known to infest radix of *Tamarix ramosissima*. Most of the species are brown, blackish green or bright green and some may remain lightly covered with whitish wax secretion.

The genus is mainly distributed in the Palaearctic, Oriental, Australian and Nearctic regions. Pintera (1968) had given an account of Middle-European species and Inouye (1970) had dealt with the Japanese species. Szelegiewicz (1962) while describing a new species discussed the relationships between several species of the genus. Zhang and Zhong (1983) described one species from

China. Binazzi (1983, 1996) described one new species and provided a key to alate viviparous females from Italy. Based on materials from China, the authors systematically studied species of *Eulachnus* from China. There are 12 species in China, including one new species and two new record species here reported.

2 MATERIALS AND METHODS

The specimens including types are deposited in the Zoological Collections, Institute of Zoology, the Chinese Academy of Sciences. The research methods and structural terminology follow Inouye (1970) and Ghosh (1982). The unit of measurements is in millimeter (mm).

3 RESULTS AND DISCUSSIONS

3.1 The systematic description of *Eulachnus* *Eulachnus* del Guercio, 1909

Eulachnus del Guercio, 1909, *Redia*, 5: 315

Protolachnus Theobald, 1915, *Bull. Ent. Res.*, 6: 145

Type-species: *Lachnus agilis* Kaltenbach, 1843 see *Bull. Zool. Nom.*, 22: 188

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Body long elliptical, 1.40 ~ 3.40 mm length. Head with a epicranial suture, front flat. Eyes with ocular tubercles. Antenna 6-segmented, 0.30 ~ 0.50 time as long as body; primary rhinaria without chitinous rims, antennal segment III fused with segment IV. First tarsal segments long, with dorsal hairs. Siphunculus ring-like, distal part much small, not surrounded by hairs. Cauda and anal plate circular, with many hairs. Alate viviparous

females: pterostigma narrow and long, radial sectors straight; media with 2 branches, point-like, the main branch reduced; hind wings with 2 obliques.

There are 20 species and subspecies in the world (Remaudière *et* Remaudière 1997, Qiao and Zhang, 1999; Zhang, Qiao and Zhong, 1999). Based on our study, twelve species are found in China, including one new species and two new record species.

Key to the species of *Eulachnus* del Guercio from China

(Apterous viviparous females)

- 1 Abdominal tergites with hair-bearing sclerites 2
Abdominal tergites without hair-bearing sclerites or only a few tergites with ones 11
- 2 Dorsal hairs on abdominal tergites and antennal hairs shorter and point; on *Pinus massoniana* *E. nigricola* Pašek
Dorsal hairs on abdominal tergites and antennal hairs long, stout peg-shaped or point 3
- 3 Dorsal hairs of body long and point, hairs on tibia long, point or stout; length of hairs on antennal segment III at least 2.50 times as basal diameter of the segment, almost as dorsal hairs of body 7
Dorsal hairs of body and hairs on tibia stout or slightly spatula; length of hairs on antennal segment III, 1.00 time or 2.00 times as basal diameter of the segment, as long as dorsal hairs of body 4
- 4 Dorsal patches on abdomen developed, usually 2 ~ 4 patches fused with each other, dorsal hairs on abdominal tergites II ~ VI 0.052 mm in length; distal half of hind tibia pale; on *Pinus massoniana* *E. similialticola* Zhang, sp. nov.
Dorsal patches on abdomen simple, not fused with each other, dorsal hairs on abdominal tergites II ~ VI at least 0.067 mm in length; hind tibia almost brown; on *Pinus massoniana*, *P. yunnanensis*, *P. mugo* 5
- 5 Dorsal hairs of body peg-shaped. Ultimate rostral segment without accessory hairs. Antennal segment III with 6 or 7 hairs
..... *E. tuberculostemmatus* (Theobald)
Dorsal hairs of body long and stout. Ultimate rostral segment with accessory hairs. Antennal segment III with 17 ~ 22 hairs 6
- 6 Antennal segment III without secondary rhinaria; ultimate rostral segment with 2 pairs of accessory hairs; spinal and pleural patches on abdominal tergite VIII fused with each other *E. drakontos* Zhang *et* Qiao
Antennal segment III with 1 secondary rhinarium; ultimate rostral segment with 1 pair of accessory hairs; spinal, pleural and marginal patches on abdominal tergite VIII fused with each other *E. alticola* Börner
- 7 Apex of antennal segments III and IV each with 1 secondary rhinarium 9
Apex of antennal segments III and IV without secondary rhinaria 8
- 8 Antenna 2.260 mm in length, 0.83 time as long as body, length of antennal segments III - VI: 0.700, 0.443, 0.530, 0.329 + 0.052 mm, respectively; on *Pinus armandii* *E. pinisuctus* Zhang, Chen, Zhong *et* Li
Antenna 1.040 mm in length, 0.47 time as long as body; length of antennal segments III - VI: 0.335, 0.175, 0.195, 0.150 + 0.025 mm, respectively; on *Pinus massoniana* and *P. thunbergii* *E. thunbergii* (Wilson)
- 9 Abdominal tergites with the same hair-bearing sclerites in size; hair-bearing sclerites large, near each other on each tergite, usually 2 ~ 6 ones fused with each other *E. agilis* (Kaltenbach)
Abdominal tergites with the different hair-bearing sclerites in size; hair-bearing sclerites small to absent, distant each other on each tergite 10
- 10 Hair-bearing sclerites partly reduced; antennal hairs stout at apex, length of hairs on antennal segment III 2.50 times as long as basal diameter of the segment; length of hairs on hind tibia 1.57 times as long as basal width of the segment; on *Pinus tabulaeformis*
..... *E. pinitabulaeformis* Zhang
Hair-bearing sclerites present; antennal hairs point; length of hairs on antennal segment III 3.30 ~ 4.50 times as long as basal diameter of the segment; length of hairs on hind tibia 2.50 ~ 3.10 times as long as basal width of the segment; on *Pinus* spp. (but not feeding on *P. tabulaeformis*) *E. rileyi* (Williams)

- 11 Length of hairs on antennal segment III 1.60 ~ 2.00 times as long as basal diameter of the segment, length of hairs on hind tibia 0.90 ~ 1.00 time as long as basal width of the segment; head with 20 long dorsal hairs, length of dorsal hairs of head 0.080 mm; on *Pinus cembra* *E. cembrae* Börner
- Length of hairs on antennal segment III 0.50 time as long as basal diameter of the segment; length of hairs on hind tibia 0.50 time as long as basal width of the segment; head with 8 or 9 long and 4 short dorsal hairs; length of long dorsal hairs and short dorsal hairs of head 0.041 mm, 0.010 ~ 0.013 mm, respectively; on *Pinus armandii* *E. piniarmandifoliae* Zhang

3. 2 The systematic descriptions of species

(1) *Eulachnus agilis* (Kaltenbach, 1843)

Lachnus agilis Kaltenbach, 1843. *Monographie der Familien der Pflanzenläuse (Phytophthires)* Aachen, 161

Host-plants *Pinus yunnanensis*, *P. heldreichii*, *P. kochiana*, *P. mugo*, *P. nigra*, *P. resinosa*, *P. sosnowskyi*, *P. sylvestris* and *P. uncinata*

Distribution China: Sichuan Prov., Taiwan Prov., Fujian Prov., Guangdong Prov., Guangxi Auto. Reg. (Liuzhou City, No. Y6514; Guilin City, No. Y6694), Yunnan Prov. (Lijiang City, No. 7140); Turkey, Europe and North America (Tissot, 1939; Blackman and Eastop, 1994; Tao, 1990).

(2) *Eulachnus alticola* Börner, 1940 New Record in China

Eulachnus alticola Börner, 1940. *New Blattläuse aus Mitteleuropa*, 1

Host-plants *Pinus massoniana*, *P. yunnanensis* and *P. mugo*

Specimens checked 1 apterous viviparous female, No. 6067, Shandong Prov. (Qingdao City); 1 apterous viviparous female, No. Y1880, Hunan Prov. (Feie Mount.); 1 apterous viviparous female, No. 9060, Hunan Prov. (Yizhang County); 2 alate viviparous females, No. Y6814, Guangxi Auto. Reg. (Xinan County); 17 alate viviparous females and 7 apterous viviparous females, No. Y1142, Guangxi Auto. Reg. (Bobai County); 8 apterous viviparous females, No. 7099, Yunnan Prov. (Kunming City).

Distribution China: Shandong Prov. (Qingdao City, No. 6067), Zhejiang Prov., Hunan Prov. (Feie Mount., No. Y1880; Yizhang County, No. 9060), Guangxi Auto. Reg. (Xinan County, No. Y6814; Bobai County, No. Y1142), Yunnan Prov. (Kunming City, No. 7099); Czech (Pintera, 1968).

(3) *Eulachnus cembrae* Börner, 1950

Eulachnus cembrae Börner, 1950. *New Europäische Blattlä-*

usarten, Naumburg (Saale), 2

Host-plants *Pinus cembra*, *Pinus* sp.

Distribution China: Zhejiang Prov. (Hangzhou City, No. 18, 193-01), Qinghai Prov. (Xining City, No. 8668); Czech, Poland, Austria, Switzerland, Slovak Republics, India, Siberia, Korea and Japan (Ghosh, 1982, Blackman and Eastop, 1994; Pintera, 1968; Zhang, 1999).

(4) *Eulachnus drakontos* Zhang et Qiao, 1999

Eulachnus drakontos Zhang et Qiao, 1999, *Acta Zootax. Sin.*, 24: 174

Host-plants *Pinus massoniana*

Distribution China: Fujian Province (Jiangle County, No. 9828) (Qiao and Zhang 1999).

(5) *Eulachnus nigricola* (Pašek, 1953)

Protolachnus nigricola Pašek, 1953, *Zool. Ent. Listy*, 2: 7

Host-plants *Pinus massoniata*, *P. tabulaeformis* and *P. nigra*

Distribution China: Henan Prov. (Ruyang County, No. Y1240), Shanxi Prov. (Taiyuan City, No. Y7623), Sichun Prov. (Jiuzaigou Mount., No. 8075), Gansu Prov. (Gulang County, No. 8029; Tianshui City, No. 8103; Ming County, No. 8488), Qinghai Prov. (Xining City, No. 8668), Guangxi Auto. Reg. (Nandan County, No. Y6811); Turkey, Czech, Spain, France, Slovak Republics, Hungary, Bulgaria (Pašek, 1954; Pintera, 1968; Szelegiewicz, 1978; Blackman and Eastop, 1994; Qiao and Zhang, 1999; Zhang, Qiao and Zhong, 1999).

(6) *Eulachnus piniarmandifoliae* Zhang, 1992

Eulachnus piniarmandifoliae Zhang, 1992, *Iconography of Forest Insects in Hunan China*, 151 ~ 152

Host-plants *Pinus armandii*

Distribution China: Hunan Prov. (Yizhang County, No. 7367), Yunnan Prov. (Kunming City, No. 7352, No. 7367) (Zhang, Zhong and Zhang, 1992).

(7) *Eulachnus pinisuctus* Zhang, Chen, Zhong *et* Li, 1999

Eulachnus pinisuctus Zhang, Chen, Zhong *et* Li, 1999, Lachnidae. In: Zhang, 1999, Fauna of Agricultural and Forestry Aphids of Northwest, China, 185.

Host-plants *Pinus armandii*, *P. nigra*

Distribution China: Shaanxi Prov. (Zhouzhi County, No. 6529), Gansu Prov. (Tianshui City, No. 8111, No. 8112) (Zhang, 1999).

(8) *Eulachnus pinitabulaeformis* Zhang, 1992

Eulachnus pinitabulaeformis Zhang, 1992, *Iconography of Forest Insects in Hunan China*, 152

Host-plants *Pinus tabulaeformis*

Distribution China: Liaoning Prov. (Zhangwu County, No. Y424), Beijing City (Badaling District, No. 7737; Haidian District, No. Y1797, No. Y426), Hunan Prov. (Chenzhou City, No. 9075; Dayong County, No. 8938; Rucheng County, No. 9062; Yizhang County, No. 9057, No. 9058, No. 9070), Gansu Prov. (Xihe County, No. 8843) (Zhang, Zhong and Zhang, 1992; Zhang, 1999).

(9) *Eulachnus rileyi* (Williams, 1911)

Lachnus rileyi Williams, 1911, *Univ. Nebr. Dpt. Ent. Studies*, 10: 24

Eulachnus bluncki Börner, 1940, *Neue Blattläuse aus Mitteleuropa*, 1

Host-plants *Pinus massoniana*, *P. thunbergi*, *P. cembra*, *P. rigida*, *P. pinea*, *P. mugo*, *P. nigra*, *P. strobus*, *P. sylvestris* and *P. ponderosa*.

Distribution China: Gansu Prov. (Ming County, No. 8485; Longxi County, No. 8505), Guangxi Auto. Reg. (Nandan County, No. Y6513; Pingling County, No. Y6676), Yunnan Prov. (Yuxi City, No. Y2461; Lijuan County, No. Y2488), Guizhou Prov. (Guiyang city, No. Y1977); Turkey, Russia, Czech, Poland, Germany, Austria, Hungary, Sweden, Switzerland, Portugal, Bulgaria, England, America, Canada (Carter, 1982; Szelegiewicz, 1978; Pintera, 1968; Blackman and Eastop, 1994; Tissot, 1939; Pašek, 1954).

(10) *Eulachnus similiaticola* Zhang, sp. nov. (Figs. 1 ~ 8)

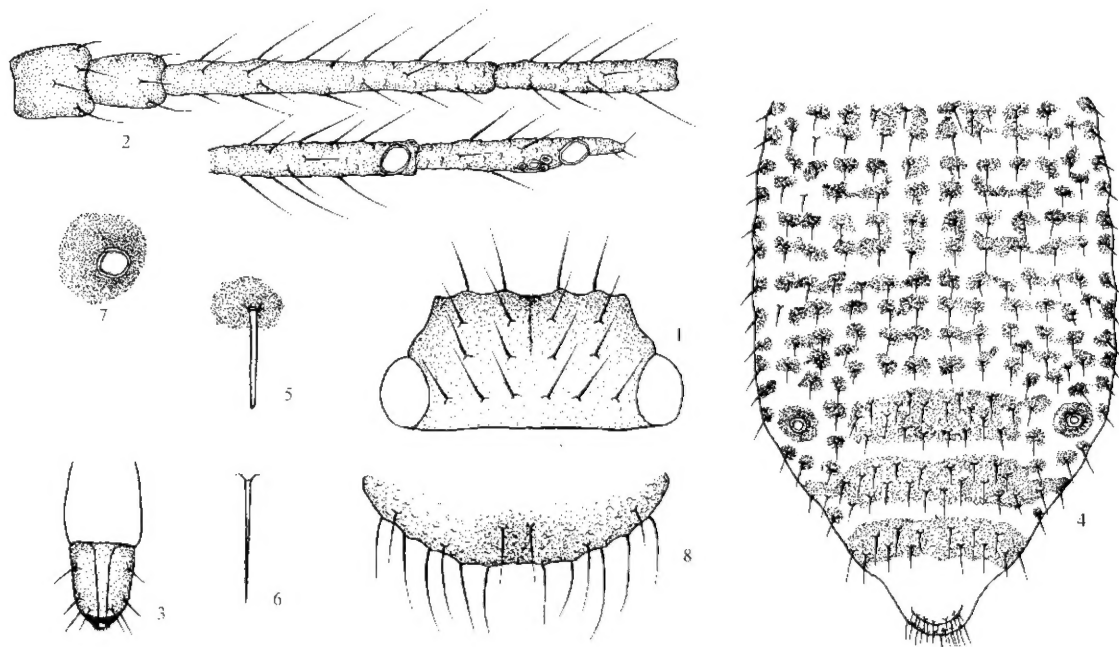
Apterous viviparous females Measurements (in mm). Body 1.937 in length, 0.900 in width. Antenna

1.040, length of segments I ~ VI: 0.062, 0.072, 0.314, 0.175, 0.196, 0.165 + 0.034, respectively. Ultimate rostral segment 0.082 in length. Apical diameter of siphunculus 0.031. Cauda 0.072 in length. Hind femur 0.628, hind tibia 0.958, second hind tarsal segment 0.144 in length.

Mounted specimens. Body brown. Antennae black, femora black, basal part of tibia brown, tarsi pale, abdomen pale. Abdominal tergites I ~ VIII each with large hair-bearing sclerites, spinal hair-bearing sclerites fused with each other, occasionally, tergites VI ~ VIII each with transverse patches. Siphunculi brown. Cauda and anal plate brown. Rostrum reaching mid-coxae; ultimate rostral segment 0.57 time as long as second hind tarsal segment, with 2 accessory hairs. Dorsal hairs of body blunt at apex. Head with 16 ~ 22 dorsal hairs; pro-, meso- and metanotum each with 16 ~ 20 hairs; abdominal tergites I ~ VII each with 16 ~ 22, 21 ~ 24, 24 ~ 28, 34 ~ 38, 41, 26 ~ 29, 24 hairs. Antenna 6-segmented, 0.54 time as long as body; length in proportion of segments I ~ VI: 20, 23, 100, 56, 62, 53 + 11. Antennal segments I ~ VI each with 4, 4 or 5, 17 ~ 21, 8 or 9, 10 ~ 13, 3 ~ 8 + 6 hairs, respectively; length of hairs on segment III 0.062, 2.00 times as long as basal diameter of segment; antennal segments III ~ VI without secondary rhinaria. Fore and middle femora thick, 1.20 times as long as hind femora. Hind femur 2.00 times as long as antennal segment III, hind tibia 0.49 time as long as body. Upper length of first hind tarsal segment 1.67 times as long as basal diameter of segment. Siphunculi surrounded by patches. Cauda circular at apex, with 12 ~ 18 hairs. Anal plate with 32 hairs.

Holotype apterous viviparous female, No. Y6598-1-2-2, 1981-~~XI~~-17, Guangxi Auto. Reg. (Longshen County, E110.0°, N25.7°), by Liang Xinqiang, on *Pinus massoniana*; paratypes 5 apterous viviparous females, No. Y6598, other data same as holotype.

This new species is closely related to *E. alticola* Börner, but differs from the latter in: hair-bearing sclerites on abdominal tergites developed; fused with each other, occasionally (the latter: not developed); fore femora thick, basal half of hind femora pale (the latter: normal, black). This new species is also near to *E. agilis* (Kaltenbach) in dorsal patches of body, but differs



Figs. 1~8 *Eulachnus similialticola* Zhang, sp. nov.

Apterous viviparous female: 1. dorsal view of head, 2. antenna, 3. ultimate rostral segment, 4. dorsal view of abdomen, 5. dorsal hair of body, 6. ventral hair, 7. siphunculus, 8. cauda

from the latter in: dorsal hairs of body and hairs on legs blunt at apex (the latter: point) (Eastop and Hille Ris Lambers, 1976).

(11) *Eulachnus thunbergii* (Wilson, 1919)

Lachniella thunbergii Wilson, 1919, *Ent. News*, 30: 3

Lachnus longicorpi Shinji, 1922, *Zool. Mag.*, 24

Eulachnus piniformosanus Takahashi, 1931, *Dept. Agr. Gov't. Res. Inst. Formosa Rept.*, 53: 25

Eulachnus taiwanus Takahashi, 1932, *Proc. Ent. Soc. Washington*, 24: 152

Eulachnus pini Takahashi, 1935, *Philippine J. Sci.*, 56

Eulachnus thunbergii: Ghosh and Rachychaudhuri, 1968, *Bull. Ent.*, 9 (2): 147

Lachnus bielauskii Szelegiewicz, 1970, *Ann. Zool. Warz.*, 18: 15~20

Eulachnus thunbergii: Inouye, 1970, *Bull. Govt. Forest Exp. Stn. Meguro*, 228: 92

Host-plants *Pinus massoniana*, *P. taiwanensis*, *P. thunbergii*, *Pinus* spp.

Distribution China: Liaoning Prov. (Linyuan County, No. 7405), Guangxi Auto. Reg. (Ziyuan County, No. Y6652), Yunnan Prov. (Lijiang County, No. 7129), Taiwan Prov.; Japan, Korea, Siberia, India, Java, Philippines, Poland, Australia (New South Wales) (Inouye, 1970; Ghosh, 1982; Szele-

giewicz, 1962; Tao, 1990).

(12) *Eulachnus tuberculostemmatus* (Theobald, 1915) New Record in China

Protolachnus tuberculostemmatus Theobald, 1915, *Bull. Ent. Res.*, 6: 145

Host-plants *Pinus yunnanensis*, *P. halepensis*, *P. canariensis*, *P. eldarica*, *P. pinoster*, *P. pinea* and *P. nigra*

Specimens checked 1 apterous viviparous female and 1 alate viviparous female, No. 7346, Yunnan Province (Kunming City)

Distribution China: Yunnan Province (Kunming City, No. 7346); Southern Europe, Mediterranean area and Southwest Asia (Blackman and Eastop, 1994).

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中国长大蚜属 *Eulachnus* del Guercio 研究及一新种记述

(同翅目: 蚜总科, 大蚜科)

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摘要: 系统研究了中国的长大蚜属 *Eulachnus* del Guercio, 1909, 共记述 12 种, 其中 1 个新种, 肖高山长大蚜 *E. similialticola* Zhang, sp. nov.; 2 种中国新记录种: 高山长大蚜 *E. alticola* Börner, 1940 和钉毛长大蚜 *E. tuberculostemmatum* (Theobald, 1915)。论文提供了该属的分种检索表, 各种提供了寄主植物和地理分布, 新种还提供了与其近缘种的示差鉴别。所有研究标本, 包括模式标本均保存在中国科学院动物研究所动物标本馆。

关键词: 同翅目; 蚜总科; 大蚜科; 长大蚜属; 新种; 新记录; 中国

中图分类号: Q969.367.2 **文献标识码:** A **文章编号:** 0454-6296 (2002) 01-0102-07

新种记述

肖高山长大蚜, 新种 *Eulachnus similialticola* Zhang, sp. nov. (图 1~8)

正模: 无翅孤雌蚜, No. Y6598-1-2-2, 1981-XI-17, 广西 (龙胜), 梁新强采集, 寄主: 马尾松; 副模: 5 头无翅孤雌蚜, No. Y6598, 其它同正模。

本新种与高山长大蚜 *E. alticola* (Börner) 相近, 但腹部背毛基斑较后者发达, 有时愈合扩展成片, 前足股节粗壮, 后足股节基半部淡色 (后者: 前足股节正常, 后足股节全部为黑色)。腹部背斑与捷长大蚜 *E. agilis* (Kaltenbach) 相近, 但体背毛和足毛钝顶 (后者: 尖锐)。